a second covering layer of semiconductor material of second electrical conductivity type having a top surface and being contiguous to the top surface of the first covering layer and extending vertically downward from the top surface of the first covering layer into an upper portion of the first covering layer;

a third covering layer of semiconductor material of said first electrical conductivity type having a top surface and being contiguous to and partly overlying the top surface of the second covering layer, where the maximum depth of the second covering layer relative to the top surface of the third covering layer is a depth d_1;

a trench, having side walls and a bottom wall, said side walls extending vertically downward from the top surface of the third covering layer through the third and second covering layers and through a portion of, but not all of, the first covering layer, where the trench has a maximum depth relative to the top surface of the third covering layer equal to a second depth d_2 and d_2 is less than d_1 [, where the trench in horizontal cross section is approximately a polygonal stripe, and where this polygonal stripe laterally surrounds and is spaced apart from the exposed pattern of the second covering layer at the top surface of the third covering layer];

a layer of oxide positioned within the trench and contiguous to the bottom walls and side walls of the trench so that portions, but not all, of the trench are filled with the oxide layer;

electrically conducting semiconductor material, contiguous to the oxide layer and positioned within the trench so that the oxide layer lies between the electrically conducting semiconductor material and the bottom and side walls of the trench; and

three electrodes that are electrically coupled to the electrically conducting semiconductor material in the

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